

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: ANTHONY JOHN KINNEY
GARY MICHAEL FADER
- (ii) TITLE OF INVENTION: SUPPRESSION OF SPECIFIC
CLASSES OF SOYBEAN SEED
PROTEIN GENES
- (iii) NUMBER OF SEQUENCES: 21
- (iv) CORRESPONDENCE ADDRESS:
 - (A) NAME: E. I. DU PONT DE NEMOURS AND COMPANY
 - (B) STREET: 1007 MARKET STREET
 - (C) CITY: WILMINGTON
 - (D) STATE: DELAWARE
 - (E) COUNTRY: UNITED STATES OF AMERICA
 - (F) ZIP: 19898
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: DISKETTE, 3.50 INCH
 - (B) COMPUTER: IBM PC COMPATIBLE
 - (C) OPERATING SYSTEM: MICROSOFT WINDOWS 95
 - (D) SOFTWARE: MICROSOFT WORD 7.0A
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER:
 - (B) FILING DATE:
 - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 60/019,940
 - (B) FILING DATE: JUNE 14,1996
- (viii) ATTORNEY/AGENT INFORMATION:
 - (A) NAME: LYNNE M. CHRISTENBURY
 - (B) REGISTRATION NUMBER: 30,971
 - (C) REFERENCE/DOCKET NUMBER: BB-1071-A
- (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: 302-992-5481
 - (B) TELEFAX: 302-773-0164

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1818 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

ATGATGAGAG	CACGGTCCCC	ATTACTGTTG	CTGGGACTTG	TTTCCTGGC	TTCAGTTTCT	60
GTCTCATTTG	GCATTGCTTA	CTGGGAAAAA	GAGAACCCCA	AACACAACAA	GTGTCTCCAG	120
AGTTGCAATA	GCGAGAGAGA	CTCGTACAGG	AACCAAGCAT	GCCACGCTCG	TTGCAACCTC	180
CTTAAGGTGG	AGAAAGAAGA	ATGTGAAGAA	GGTGAAATTC	CACGACCACG	ACCACGACCA	240
CAACACCCGG	AGAGGGAACC	TCAGCAACCC	GGTGAGAAGG	AGGAAGACGA	AGATGAGCAA	300
CCACGTCCAA	TCCCATTCCC	ACGCCCACAA	CCTCGTCAAG	AAGAAGAGCA	CGAGCAGAGA	360
GAGGAACAGG	AATGGCCTCG	CAAGGAGGAA	AAACGCGGAG	AAAAGGGAAG	TGAAGAGGAA	420
GATGAGGATG	AGGATGAGGA	ACAAGATGAA	CGTCAATTCC	CATTCCCACG	CCCACCTCAT	480
CAGAAGGAAG	AGCGAAACGA	AGAGGAAGAT	GAGGATGAGG	AGCAGCAGCG	AGAGAGCGAA	540
GAAAGTGAAG	ATTCTGAGTT	ACGAAGACAT	AAGAATAAGA	ACCCTTTTCT	CTTCGGCTCT	600
AACAGGTTCG	AAACTCTCTT	CAAAAACCAA	TATGGTCGCA	TCGCGTCCT	CCAGAGGTTC	660
AACCAACGCT	CCCCACAAC	TCAGAATCTC	CGAGACTACC	GCATTTTGGA	GTTCAACTCC	720
AAACCCAACA	CCCTCCTTCT	CCCCAACCAT	GCTGACGCTG	ATTACCTCAT	CGTTATCCTT	780
AACGGGACTG	CCATTCTTTC	CTTGGTGAAC	AACGACGACA	GAGACTCCTA	CAGACTTCAA	840
TCTGGTGATG	CCCTGAGAGT	CCCCTCAGGA	ACCACATACT	ATGTGGTCAA	CCCTGACAAC	900
AACGAAAATC	TCAGATTAAT	AACACTCGCC	ATACCCGTTA	ACAAGCCTGG	TAGATTTGAG	960
AGTTTCTTCC	TATCTAGCAC	TGAAGCTCAA	CAATCCTACT	TGCAAGGATT	CAGCAGGAAC	1020
ATTTTAGAGG	CCTCCTACGA	TACCAAATTC	GAGGAGATAA	ACAAGGTTCT	GTTTAGTAGA	1080
GAGGAAGGGC	AGCAGCAAGG	GGAGCAGAGG	CTGCAAGAGA	GCGTGATTGT	GGAAATCTCG	1140
AAGGAACAGA	TTCGGGCACT	GAGCAAACGT	GCCAAATCTA	GTTCAAGGAA	AACCATTCTT	1200
TCTGAAGATA	AACCTTTTAA	CTTGAGAAGC	CGCGACCCCA	TCTACTCCAA	CAAGCTTGGC	1260
AAGTTCTTTG	AGATCACCCC	AGAGAAAAAC	CCCCAGCTTC	GGGACTTGGA	TATCTTCCTC	1320
AGTATTGTGG	ATATGAACGA	GGGAGCTCTT	CTTCTACCAC	ACTTCAATTC	AAAGGCGATA	1380

GTGATACTGG	TAATTAATGA	AGGAGATGCA	AACATTGAAC	TTGTTGGCCT	AAAAGAACAA	1440
CAACAGGAGC	AGCAACAGGA	AGAGCAACCT	TTGGAAGTGC	GGAAATATAG	AGCCGAATTG	1500
TCTGAACAAG	ATATATTTGT	AATCCCAGCA	GGTTATCCAG	TTGTGGTCAA	CGCTACCTCA	1560
AATCTGAATT	TCTTTGCTAT	TGGTATTAAT	GCCGAGAACA	ACCAGAGGAA	CTTCCTCGCA	1620
GGTTCGCAAG	ACAATGTGAT	AAGCCAGATA	CCTAGTCAAG	TGCAGGAGCT	TGCATTCCCT	1680
GGGTCTGCAC	AAGCTGTTGA	GAAGCTATTA	AAGAACCAAA	GAGAATCCTA	CTTTGTGGAT	1740
GCTCAGCCTA	AGAAGAAAGA	GGAGGGGAAT	AAGGGAAGAA	AGGGTCCTTT	GTCTTCAATT	1800
TTGAGGGCTT	TTTACTGA					1818

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1920 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

ATGATGAGAG	CGCGGTTCCC	ATTACTGTTG	CTGGGAGTTG	TTTTCCTAGC	ATCAGTTTCT	60
GTCTCATTG	GCATTGCGTA	TTGGGAAAAG	CAGAACCCCA	GTCACAACAA	GTGCCTCCGA	120
AGTTGCAATA	GCGAGAAAGA	CTCCTACAGG	AACCAAGCAT	GCCACGCTCG	TTGCAACCTC	180
CTTAAGGTGG	AGGAAGAAGA	AGAATGCGAA	GAAGGTCAAA	TTCCACGACC	ACGACCACAA	240
CACCCGGAGA	GGGAACGTCA	GCAACACGGT	GAGAAGGAGG	AAGACGAAGG	TGAGCAGCCA	300
CGTCCATTCC	CATTCCCACG	CCCACGCCAA	CCTCATCAAG	AGGAAGAGCA	CGAGCAGAAG	360
GAGGAACACG	AATGGCATCG	CAAGGAGGAA	AAACACGGAG	GAAAGGGAAG	TGAAGAGGAA	420
CAAGATGAAC	GTGAACACCC	ACGCCCACAC	CAACCTCATC	AAAAGGAAGA	GGAAAAGCAC	480
GAATGGCAAC	ACAAGCAGGA	AAAGCACCAA	GGAAAGGAAA	GTGAAGAAGA	AGAAGAAGAC	540
CAAGACGAGG	ATGAGGAGCA	AGACAAAGAG	AGCCAAGAAA	GTGAAGGTTC	TGAGTCTCAA	600
AGAGAACCAC	GAAGACATAA	GAATAAGAAC	CCTTTTCACT	TCAACTCTAA	AAGGTTCCAA	660
ACTCTCTTCA	AAAACCAATA	TGGCCACGTT	CGCGTCCTCC	AGAGGTTCAA	CAAACGCTCC	720
CAACAGCTTC	AGAATCTCCG	AGACTACCGC	ATTTTGGAGT	TCAACTCCAA	ACCCAACACC	780
CTTCTTCTCC	CCCACCATGC	TGACGCTGAT	TACCTCATCG	TTATCCTTAA	CGGGACTGCC	840
ATTCTTACCT	TGGTGAACAA	CGACGACCGA	GACTCTTACA	ACCTTCAATC	TGGCGATGCC	900

CTAAGAGTCC	CTGCAGGAAC	CACATTCTAT	GTGGTTAACC	CTGACAACGA	CGAGAATCTC	960
AGAATGATAG	CAGGAACCAC	ATTCTATGTG	GTTAACCTTG	ACAACGACGA	GAATCTCAGA	1020
ATGATAACAC	TCGCCATACC	CGTTAACAAA	CCCGGTAGAT	TTGAGAGTTT	CTTCCTATCT	1080
AGCACTCAAG	CTCAACAGTC	CTACTTGCAA	GGGTTAGCA	AGAATATTCT	AGAGGCCTCA	1140
TACGACACCA	AATTCGAGGA	GATAACAAG	GTTCTGTTTG	GTAGAGAGGA	GGGGCAGCAA	1200
CAAGGGGAGG	AGAGGCTGCA	AGAGAGTGTG	ATTGTGGAAA	TCTCAAAGAA	ACAAATTCGG	1260
GAAGTGAAG	AACATGCCAA	ATCTAGTTCA	AGGAAAACCA	TTTCTTCTGA	AGATAAACCT	1320
TTCAACTTGG	GAAGCCGCGA	CCCCATCTAT	TCCAACAAGC	TTGGCAAGTT	GTTTGAGATT	1380
ACCCAGAGAA	ACCCTCAGCT	TCGGGACTTG	GATGTCTTCC	TCAGTGTGTG	GGATATGAAC	1440
GAGGGAGCTC	TTTTTCTACC	ACACTTCAAT	TCAAAGGCCA	TAGTGGTACT	AGTGATTAAT	1500
GAAGGAGAAG	CAAACATTGA	ACTTGTTGGC	ATTAAAGAAC	AACAACAGAG	GCAGCAACAG	1560
GAAGAGCAAC	CTTTGGAAGT	GCGGAAATAT	AGAGCTGAAT	TGTCTGAACA	AGATATATTT	1620
GTAATCCCAG	CAGGTTATCC	AGTTATGGTC	AACGCTACCT	CAGATCTGAA	TTTCTTTGCT	1680
TTTGGTATCA	ATGCCGAGAA	CAACCAGAGG	AACTTCCTTG	CAGGTTGAA	AGACAATGTG	1740
ATAAGCCAGA	TACCTAGTCA	AGTGCAGGAG	CTTGCGTTCC	CTAGGTCTGC	AAAAGATATT	1800
GAGAACCTAA	TAAAGAGCCA	AAGTGAGTCC	TACTTTGTGG	ATGCTCAGCC	TCAGCAGAAA	1860
GAGGAGGGGA	ACAAGGGAAG	AAAGGGTCCT	TTGTCTTCAA	TTTGAGGGC	TTTTTACTGA	1920

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1320 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

ATGATGAGAG	TGCGGTTTCC	TTTGTTGGTG	TTGCTGGGAA	CTGTTTTCCT	GGCATCAGTT	60
TGTGTCTCAT	TAAAGGTGAG	AGAGGATGAG	AATAACCCTT	TCTACTTTAG	AAGCTCTAAC	120
AGCTTCCAAA	CTCTCTTTGA	GAACCAAAAC	GTTTCGCATTC	GTCTCCTCCA	GAGATTCAAC	180
AAACGCTCCC	CACAACTTGA	GAACCTTCGA	GACTACCGGA	TTGTCCAGTT	TCAGTCAAAA	240
CCCAACACAA	TCCTTCTCCC	CCACCATGCT	GACGCCGATT	TCCTCCTCTT	TGTCCTTAGC	300
GGGAGAGCCA	TACTTACCTT	GGTGAACAAC	GACGACAGAG	ACTCCTACAA	CCTTCACCCT	360

GGCGATGCCC AGAGAATCCC AGCTGGAACC ACTTACTATT TGGTTAACCC TCACGACCAC	420
CAGAACTCTCA AAATAATCAA ACTTGCCATA CCCGTCAACA AACCTGGCAG ATATGATGAT	480
TTCTTCTTAT CTAGCACTCA AGCCCAACAG TCCTACTTGC AAGGCTTCAG CCATAATATT	540
CTAGAGACCT CCTTCCATAG CGAATTCGAG GAGATAAACA GGGTTTTGTT TGGAGAGGAA	600
GAGGAGCAGA GGCAGCAAGA GGGAGTGATC GTGGAACCTCT CAAAGGAACA AATTCGGCAA	660
CTGAGCAGAC GTGCCAAATC TAGTTCAAGG AAAACCATTT CCTCCGAAGA TGAACCATTC	720
AACTTGAGAA GCCGCAACCC CATCTATTCC AACAACTTTG GAAAGTTCTT TGAGATCACC	780
CCTGAGAAAA ACCCACAGCT TCGGGACTTG GATATCTTCC TCAGTTCTGT GGATATCAAC	840
GAAGGAGCTC TTCTTCTACC AACTTCAAT TCAAAGGCCA TAGTGATACT AGTGATTAAT	900
GAAGGAGATG CAAACATTGA ACTTGTTGGC ATTAAAGAAC AACACAGAA GCAGAAACAG	960
GAAGAGGAAC CTTTGGAAGT GCAAAGGTAC AGAGCTGAAT TGTCTGAAGA CGATGTATTT	1020
GTAATTCCAG CAGCTTATCC ATTTGTCGTC AACGCTACCT CAAACCTCAA TTCCTTGCT	1080
TTTGGTATCA ATGCTGAGAA CAACCAGAGG AACTTCCTTG CAGGCGAGAA AGACAATGTG	1140
GTAAGGCAGA TAGAAAGACA AGTGCAGGAG CTTGCGTTCC CTGGGTCTGC ACAAGATGTT	1200
GAGAGGCTAT TAAAGAAGCA GAGGGAATCC TACTTTGTTG ATGCTCAGCC TCAGCAGAAG	1260
GAGGAGGGGA GTAAGGGAAG AAAGGGTCCT TTCCTTCAA TCTTAGGTGC TCTCTACTGA	1320

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

CGTACCATGG TGAGAGCGCG GTTCC

25

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CGGTACCGAA TTGAAGTGTG GTAG 24

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

TCGTCCATGG AGCGCGGTTC CCATTAC 27

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

TCTCGGTCGT CGTTGTT 17

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

ACGGTACCGA TGAGAGCGCG GTTCC 25

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

AACCCATGGT CAGTAAAAAG CCCTCAA

27

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

CGGGTATGGC GAGTGTT

17

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1488 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

ATGGCCAAGC TAGTTTTTTC CCTTTGTTTT CTGCTTTTCA GTGGCTGCTG CTTGCTTTTC	60
AGTTCCAGAG AGCAGCCTCA GCAAAACGAG TGCCAGATCC AAAAACTCAA TGCCCTCAAA	120
CCGGATAACC GTATAGAGTC AGAAGGAGGG CTCATTGAGA CATGGAACCC TAACAACAAG	180
CCATTCCAGT GTGCCGGTGT TGCCCTCTCT CGCTGCACCC TCAACCGCAA CGCCCTTCGT	240
AGACCTTCCT ACACCAACGG TCCCCAGGAA ATCTACATCC AACAAGGTAA GGGTATTTTT	300
GGCATGATAT ACCCGGGTTG TCCTAGCACA TTTGAAGAGC CTCAACAACC TCAACAAAGA	360
GGACAAAGCA GCAGACCACA AGACCGTCAC CAGAAGATCT ATAAC TTCAG AGAGGGTGAT	420
TTGATCGCAG TGCCTACTGG TGTTCATGG TGGATGTACA ACAATGAAGA CACTCCTGTT	480
GTTGCCGTTT CTATTATTGA CACCAACAGC TTGGAGAACC AGCTCGACCA GATGCCTAGG	540
AGATTCTATC TTGCTGGGAA CCAAGAGCAA GAGTTTCTAA AATATCAGCA AGAGCAAGGA	600
GGTCATCAAA GCCAGAAAGG AAAGCATCAG CAAGAAGAAG AAAACGAAGG AGGCAGCATA	660
TTGAGTGGCT TCACCCTGGA ATTCTTGGA CATGCATTCA GCGTGGACAA GCAGATAGCG	720
AAAAACCTAC AAGGAGAGAA CGAAGGGGAA GACAAGGGAG CCATTGTGAC AGTGAAAGGA	780
GGTCTGAGCG TGATAAAACC ACCCACGGAC GAGCAGCAAC AAAGACCCCA GGAAGAGGAA	840

GAAGAAGAAG	AGGATGAGAA	GCCACAGTGC	AAGGGTAAAG	ACAAACACTG	CCAACGCCCC	900
CGAGGAAGCC	AAAGCAAAAG	CAGAAGAAAT	GGCATTGACG	AGACCATATG	CACCATGAGA	960
CTTCGCCACA	ACATTGGCCA	GACTTCATCA	CCTGACATCT	ACAACCCTCA	AGCCGGTAGC	1020
GTCACAACCG	CCACCAGCCT	TGACTTCCCA	GCCCTCTCGT	GGCTCAGACT	CAGTGCTGAG	1080
TTTGATCTC	TCCGCAAGAA	TGCAATGTTT	GTGCCACACT	ACAACCTGAA	CGCGAACAGC	1140
ATAATATACG	CATTGAATGG	ACGGGCATTG	ATACAAGTGG	TGAATTGCAA	CGGTGAGAGA	1200
GTGTTTGATG	GAGAGCTGCA	AGAGGGACGG	GTGCTGATCG	TGCCACAAAA	CTTTGTGGTG	1260
GCTGCAAGAT	CACAGAGTGA	CAACTTCGAG	TATGTGTCAT	TCAAGACCAA	TGATACACCC	1320
ATGATCGGCA	CTCTTGACAG	GGCAAACCTCA	TTGTTGAACG	CATTACCAGA	GGAAGTGATT	1380
CAGCACACTT	TCAACCTAAA	AAGCCAGCAG	GCCAGGCAGA	TAAAGAACAA	CAACCCTTTC	1440
AAGTTCCTGG	TTCCACCTCA	GGAGTCTCAG	AAGAGAGCTG	TGGCTTAG		1488

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1458 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

ATGGCCAAGC	TTGTTCTTTC	CCTTTGTTTC	CTTCTTTTCA	GTGGCTGCTT	CGCTCTGAGA	60
GAGCAGGCAC	AGCAAAATGA	GTGCCAGATC	CAAAAAGCTGA	ATGCCCTCAA	ACCGGATAAC	120
CGTATAGAGT	CGGAAGGTGG	GTTCAATTGAG	ACATGGAACC	CTAACAACAA	GCCATTCCAG	180
TGTGCCGGTG	TTGCCCTCTC	TCGCTGCACC	CTTAACCGCA	ATGCCCTTCG	TAGACCTTCC	240
TACACCAACG	GTCCCCAGGA	AATCTACATA	CAACAAGGTA	ATGGTATTTT	TGGCATGATA	300
TTCCCGGGTT	GTCTTAGCAC	TTATCAAGAG	CCGCAAGAAT	CTCAGCAACG	AGGACGAAGC	360
CAGAGGCCCC	AAGACCGTCA	CCAAAAGGTA	CATCGCTTCA	GAGAGGGTGA	TTTGATCGCA	420
GTGCCTACTG	GTGTTGCATG	GTGGATGTAC	AACAATGAAG	ACACTCCTGT	TGTTGCCGTT	480
TCTATTATTG	ACACCAACAG	CTTGGAGAAC	CAGCTCGACC	AGATGCCTAG	GAGATTCTAT	540
CTTGCTGGGA	ACCAAGAGCA	AGAGTTTCTA	AAATATCAGC	AGCAGCAGCA	AGGAGGTTCC	600
CAAAGCCAGA	AAGGAAAGCA	ACAAGAAGAA	GAAAACGAAG	GAAGCAACAT	ATTGAGTGGC	660
TTCGCCCCTG	AATTCTTGAA	AGAAGCGTTC	GGCGTGAACA	TGCAGATAGT	GAGAAACCTA	720

CAAGGTGAGA	ACGAAGAGGA	GGATAGTGGA	GCCATTGTGA	CAGTGAAAGG	AGGTCTAAGA	780
GTCACAGCTC	CAGCCATGAG	GAAGCCACAG	CAAGAAGAAG	ATGATGATGA	TGAGGAAGAG	840
CAGCCACAGT	GCGTGGAGAC	AGACAAAGGT	TGCCAACGCC	AAAGCAAAAG	GAGCAGAAAT	900
GGCATTGATG	AGACCATTG	CACAATGAGA	CTTCGCCAAA	ACATTGGTCA	GAATTCATCA	960
CCTGACATCT	ACAACCCTCA	AGCTGGTAGC	ATCACAACCG	CCACCAGCCT	TGACTTCCCA	1020
GCCCTCTGGC	TTCTCAAAC	CAGTGCCCAG	TATGGATCAC	TCCGCAAGAA	TGCTATGTTT	1080
GTGCCACACT	ACACCCTGAA	CGCGAACAGC	ATAATATACG	CATTGAATGG	GCGGGCATTG	1140
GTACAAGTGG	TGAATTGCAA	TGGTGAGAGA	GTGTTTGATG	GAGAGCTGCA	AGAGGGAGGG	1200
GTGCTGATCG	TTCCACAAAA	CTTTGCGGTG	GCTGCAAAAT	CCCAGAGCGA	TAACTTTGAG	1260
TATGTGTCAT	TCAAGACCAA	TGATAGACCC	TCGATCGGAA	ACCTTGCAGG	GGCAAACCTCA	1320
TTGTTGAACG	CATTGCCAGA	GGAAGTGATT	CAGCACACTT	TTAACCTAAA	GAGCCAGCAG	1380
GCCAGGCAGG	TGAAGAACAA	CAACCCTTTC	AGCTTCCTTG	TTCCACCTCA	GGAGTCTCAG	1440
AGGAGAGCTG	TGGCTTAG					1458

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1446 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

ATGGCTAAGC	TTGTTCTTTC	CCTTTGTTTT	CTGCTTTTCA	GTGGCTGCTG	CTTCGCTTTC	60
AGTTTCAGAG	AGCAGCCACA	GCAAAACGAG	TGCCAGATCC	AACGCCTCAA	TGCCCTAAAA	120
CCGGATAACC	GTATAGAGTC	AGAAGGTGGC	TTCATTGAGA	CATGGAACCC	TAACAACAAG	180
CCATTCCAGT	GTGCCGGTGT	TGCCCTCTCT	CGCTGCACCC	TCAACCGCAA	CGCCCTTCGC	240
AGACCTTCCT	ACACCAACGC	TCCCCAGGAG	ATCTACATCC	AACAAGGTAG	TGGTATTTTT	300
GGCATGATAT	TCCCGGGTTG	TCCTAGCACA	TTTGAAGAGC	CTCAACAAAA	AGGACAAAGC	360
AGCAGGCCCC	AAGACCGTCA	CCAGAAGATC	TATCACTTCA	GAGAGGGTGA	TTTGATTGCA	420
GTGCCAACCG	GTTTTGCATA	CTGGATGTAC	AACAATGAAG	ACACTCCTGT	TGTTGCCGTT	480
TCTCTTATTG	ACACCAACAG	CTTCCAGAAC	CAGCTCGACC	AGATGCCTAG	GAGATTCTAT	540
CTTGCTGGGA	ACCAAGAGCA	AGAGTTTCTA	CAGTATCAGC	CACAGAAGCA	GCAAGGAGGT	600

ACTCAAAGCC	AGAAAGGAAA	GCGTCAGCAA	GAAGAAGAAA	ACGAAGGAGG	CAGCATATTG	660
AGTGGCTTCG	CCCCGGAATT	CTTGGAACAT	GCGTTCGTCG	TGGACAGGCA	GATAGTGAGA	720
AAGCTACAAG	GTGAGAACGA	AGAGGAAGAG	AAGGGTGCCA	TTGTGACAGT	GAAAGGAGGT	780
CTCAGCGTGA	TAAGCCCACC	CACGGAAGAG	CAGCAACAAA	GACCCGAGGA	AGAGGAGAAG	840
CCAGATTGTG	ACGAGAAAGA	CAAACATTGC	CAAAGCCAAA	GCAGAAATGG	CATTGACGAG	900
ACCATTTGCA	CAATGAGACT	TCGCCACAAC	ATTGGCCAGA	CTTCATCACC	TGACATCTTC	960
AACCCTCAAG	CTGGTAGCAT	CACAACCGCT	ACCAGCCTCG	ACTTCCCAGC	CCTCTCGTGG	1020
CTCAAACCTCA	GTGCCCAGTT	TGGATCACTC	CGCAAGAATG	CTATGTTCGT	GCCACACTAC	1080
AACCTGAACG	CAAACAGCAT	AATATACGCA	TTGAATGGAC	GGGCATTGGT	ACAAGTGGTG	1140
AATTGCAATG	GTGAGAGAGT	GTTTGATGGA	GAGCTGCAAG	AGGGACAGGT	GTTAATTGTG	1200
CCACAAAACCT	TTGCGGTGGC	TGCAAGATCA	CAGAGCGACA	ACTTCGAGTA	TGTTTCATTC	1260
AAGACCAATG	ATAGACCCTC	GATCGGCAAC	CTTGCAGGTG	CAAACTCATT	GTTGAACGCA	1320
TTGCCGGAGG	AAGTGATTCA	GCAAACTTTT	AACCTAAGGA	GGCAGCAGGC	CAGGCAGGTC	1380
AAGAACAACA	ACCCTTTCAG	CTTCCTGGTT	CCACCTAAGG	AGTCTCAGAG	GAGAGTTGTG	1440
GCTTAG						1446

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1689 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

ATGGGGAAGC	CCTTCACTCT	CTCTCTTTCT	TCCCTTTGCT	TGCTACTCTT	GTCGAGTGCA	60
TGCTTTGCTA	TTAGCTCCAG	CAAGCTCAAC	GAGTGCCAAC	TCAACAACCT	CAACGCGTTG	120
GAACCCGACC	ACCGCGTTGA	GTTCGAAGGT	GGTTTGATTG	AAACATGGAA	CTCTCAACAC	180
CCTGAGCTGA	AATGCGCCGG	TGTCACTGTT	TCCAAACTCA	CCCTCAACCG	CAATGGCCTC	240
CACTTGCCAT	CTTACTCACC	TTATCCCCGG	ATGATCATCA	TCGCCCAAGG	GAAAGGAGCA	300
CTGCAGTGCA	AGCCAGGATG	TCCTGAGACG	TTTGAGGAGC	CACAAGAACA	ATCAAACAGA	360
AGAGGCTCAA	GGTCGCAGAA	GCAGCAGCTA	CAGGACAGTC	ACCAGAAGAT	TCGTCACTTC	420
AATGAAGGAG	ACGTACTCGT	GATTCCTCCT	GGTGTTCCCT	ACTGGACCTA	TAACACTGGC	480

GATGAACCAG	TTGTTGCCAT	CAGTCTTCTT	GACACCTCTA	ACTTCAATAA	CCAGCTTGAT	540
CAAACCCCTA	GGGTATTTTA	CCTTGCTGGG	AACCCAGATA	TAGAGTACCC	AGAGACCATG	600
CAACAACAAC	AACAGCAGAA	AAGTCATGGT	GGACGCAAGC	AGGGGCAACA	CCAGCAGGAG	660
GAAGAGGAAG	AAGGTGGCAG	CGTGCTCAGT	GGCTTCAGCA	AACACTTCTT	GGCACAATCC	720
TTCAACACCA	ACGAGGACAT	AGCTGAGAAA	CTTCAGTCTC	CAGACGACGA	AAGGAAGCAG	780
ATCGTGACAG	TGGAAGGAGG	TCTCAGCGTT	ATCAGCCCCA	AGTGGCAAGA	ACAACAAGAT	840
GAAGATGAAG	ATGAAGACGA	AGATGATGAA	GATGAACAAA	TTCCCTCTCA	CCCTCCTCGC	900
CGACCAAGCC	ATGGAAAGCG	TGAACAAGAC	GAGGACGAGG	ACGAAGATGA	AGATAAACCT	960
CGTCCTAGTC	GACCAAGCCA	AGGAAAGCGT	GAACAAGACC	AGGACCAGGA	CGAGGACGAA	1020
GATGAAGATG	AAGATCAACC	TCGCAAGAGC	CGCGAATGGA	GATCGAAAAA	GACACAACCC	1080
AGAAGACCTA	GACAAGAAGA	ACCACGTGAA	AGAGGATGCG	AGACAAGAAA	CGGGGTTGAG	1140
GAAAATATCT	GCACCTTGAA	GCTTCACGAG	AACATTGCTC	GCCCTTCACG	CGCTGACTTC	1200
TACAACCCTA	AAGCTGGTCG	CATTAGTACC	CTCAACAGCC	TCACCCTCCC	AGCCCTCCGC	1260
CAATTCCAAC	TCAGTGCCCA	ATATGTTGTC	CTCTACAAGA	ATGGAATTTA	CTCTCCACAT	1320
TGGAATCTGA	ATGCAAACAG	TGTGATCTAT	GTGACTCGAG	GACAAGGAAA	GGTTAGAGTT	1380
GTGAACTGCC	AAGGGAATGC	AGTGTTGAC	GGTGAGCTTA	GGAGGGGACA	ATTGCTGGTG	1440
GTACCACAGA	ACTTCGTGGT	GGCGGAGCAA	GCCGGAGAAC	AAGGATTCGA	ATACATAGTA	1500
TTCAAGACAC	ACCACAACGC	AGTCACTAGC	TACTTGAAGG	ATGTGTTTAG	GGCAATTCCC	1560
TCAGAGGTTT	TTGCCCATT	TTACAACCTT	CGACAGAGTC	AAGTGTCTGA	GCTTAAGTAT	1620
GAAGGAAATT	GGGGTCCTTT	GGTCAACCCT	GAGTCTCAAC	AAGGCTCACC	CCGTGTTAAA	1680
GTCGCATAA						1689

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1551 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

ATGGGGAAGC	CCTTCTTCAC	TCTCTCTCTT	TCTTCCCTTT	GCTTGCTACT	CTTGTCGAGT	60
GCATGCTTTG	CTATTACCTC	CAGCAAGTTC	AACGAGTGCC	AACTCAACAA	CCTCAACGCG	120

TTGGAACCCG	ACCACCGCGT	TGAGTCCGAA	GGTGGTCTTA	TTGAAACATG	GAACCTCTCAA	180
CACCCCTGAGC	TGCAATGCGC	CGGTGTCACT	GTTTCCAAAC	GCACCCTCAA	CCGCAACGGC	240
TCCCACTTGC	CATCTTACTT	ACCTTATCCC	CAAATGATCA	TTGTCGTTCA	AGGGAAGGGA	300
GCAATTGGAT	TTGCATTTCC	GGGATGTCCC	GAGACGTTTG	AGAAGCCACA	ACAACAATCA	360
AGCAGAAGAG	GCTCAAGGTC	ACAGCAGCAA	CTACAAGACA	GTCACCAGAA	GATTCGTCAC	420
TTCAATGAAG	GAGACGTACT	AGTGATTCTT	CTTGGTGTTT	CTTACTGGAC	CTATAACACT	480
GGCGATGAAC	CAGTTGTTGC	CATCAGTCCT	CTTGACACCT	CCAACCTCAA	CAATCAGCTT	540
GATCAAAACC	CCAGAGTATT	TTACCTTGCT	GGGAACCCAG	ATATAGAGCA	TCCCGAGACC	600
ATGCAACAAC	AGCAGCAGCA	GAAGAGTCAT	GGTGGACGCA	AGCAGGGGCA	ACACCGACAG	660
CAGGAGGAAG	AAGGTGGCAG	TGTGCTCAGT	GGCTTCAGCA	AACATTTCTT	AGCACAATCC	720
TTCAACACCA	ACGAGGACAC	AGCTGAGAAA	CTTCGGTCTC	CAGATGACGA	AAGGAAGCAG	780
ATCGTGACAG	TGGAGGGAGG	CCTCAGCGTT	ATCAGCCCCA	AGTGGCAAGA	ACAAGAAGAC	840
GAAGACGAAG	ACGAAGACGA	AGAATATGGA	CGGACGCCCT	CTTATCCTCC	ACGACGACCA	900
AGCCATGGAA	AGCATGAAGA	TGACGAGGAC	GAGGACGAAG	AAGAAGATCA	ACCTCGTCCT	960
GATCACCCCTC	CACAGCGACC	AAGCAGGCCC	GAACAACAAG	AACCACGTGG	AAGAGGATGT	1020
CAGACTAGAA	ATGGGGTTGA	GGAAAATATT	TGCACCATGA	AGCTTCACGA	GAACATTGCT	1080
CGCCCTTCAC	GTGCTGACTT	CTACAACCCA	AAAGCTGGTC	GCATTAGCAC	CCTCAACAGT	1140
CTCACCCCTCC	CAGCCCTCCG	CCAATTCGGA	CTCAGTGCCC	AATATGTTGT	CCTCTACAGG	1200
AATGGAATTT	ACTCTCCAGA	TTGGAACCTG	AACGCGAACA	GTGTGACGAT	GACTCGAGGG	1260
AAAGGAAGAG	TTAGAGTGGT	GAAGTGCCAA	GGGAATGCAG	TGTTTCGACGG	TGAGCTAAGG	1320
AGGGGACAAT	TGCTAGTGGT	GCCGCAGAAC	CCCGCGGTGG	CTGAGCAAGG	GGGAGAACAA	1380
GGATTGGAAT	ATGTAGTGTT	CAAGACACAC	CACAACGCCG	TGAGCAGCTA	CATTAAGGAT	1440
GTGTTTAGGG	TAATCCCTTC	GGAGGTTCTT	TCCAATTCTT	ACAACCTTGG	CCAGAGTCAA	1500
GTGCGTCAGC	TCAAGTATCA	AGGAAACTCC	GGCCCTTTGG	TCAACCCATA	A	1551

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

GCGGCCGCAT GGCCAAGCTA GTTTTTT 27

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

GCGGCCGCTG GTGGCGTTTG TGA 23

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

GCGGCCGCTC TTCTGAGACT CCT 23

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

GCGGCCGCAT GCCCTTCACT CTCT 24

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

GCGGCCGCTG GGAGGGTGAG GCTGTT

26

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

GCGGCCGCTG AGCCTTGTTG AGAC

24